

ATTACHMENT K

NOISE ANALYSIS

PRELIMINARY NOISE IMPACT ANALYSIS

Proposed

**Lancaster Energy Facility #1
Lancaster, California**

Prepared For

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Project #A10514

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TABLE OF CONTENTS

	Page
1.0 Executive Summary	1
2.0 Introduction	1
2.1 Project Description	
2.2 General Site Characteristics	
2.3 Similar Site Investigation	
3.0 Environmental Setting	3
3.1 Existing Noise Environment	
3.2 Future Noise Environment	
4.0 Definitions	4
5.0 Synopsis of Governing Regulations	5
5.1 City of Lancaster Noise Element to the General Plan	
5.2 City of Lancaster Noise Ordinance	
5.3 County of Los Angeles Noise Ordinance	
5.4 Local Area Zoning	
5.5 Site-Controlling Noise Regulations	
6.0 Impacts	7
6.1 Potential Noise Sources	
6.2 Description of Noise Sources	
6.3 Conclusion	
7.0 Mitigation	10
7.1 Ongoing Operational Noise	
7.2 Recommended Measures	
8.0 Conclusions	13
9.0 Certification	14
10.0 References	14

ATTACHMENTS

1. Location Map
2. Aerial Photograph of Area
3. Assessor's Map
4. Parcel Map
5. Topographic Map (USGS)
6. Manufacturers' Noise Data Sheets
7. Construction Equipment Noise Levels
8. Aerial Photo with Monitoring Site Locations
9. Monitoring Results from Four Monitoring Locations
10. SOUND 32 Data and Results
11. Power Generator Noise Levels
12. Basic Site Plan Option 1 Dual Unit
13. Basic Site Plan Option 1 Quad Unit
14. Basic Side View Option 1 Single Unit

1.0 EXECUTIVE SUMMARY

The proposed project will utilize four General Electric Frame 7B commercial, power generation systems. These systems use gas turbine engines, with auxiliary equipment, to produce 60 megawatts (MW) of electricity per unit, for a total power generation capacity of 240 MW. This generation system is intended for continuous online use. Development of this plant will provide additional power to the California electrical grid.

Without mitigation, onsite noise levels due to the proposed project would be in excess of allowable levels. The surrounding area will be impacted by the noise from the operation of this generating system. Based on this preliminary analysis, it is reasonable to conclude that, with the implementation of noise mitigation as described in this report, the noise from all sources in the proposed power generating facility can be reduced to levels that comply with the noise regulations of the City of Lancaster.

2.0 INTRODUCTION

This study is a preliminary noise impact analysis of the proposed Lancaster Energy Facility #1. The purpose of this study is to determine project feasibility and project requirements, including feasibility of mitigation.

The proposed location for this facility is near the northwestern corner of the intersection of Avenue H and Division Street. This subject site was selected because of its proximity to an existing power distribution substation and a natural gas main distribution line.

The proposed project will utilize four natural gas-fired General Electric Frame 7B commercial, packaged, power generation systems, as the basic unit for installation. The manufacturer's exhaust noise control system may not be utilized for two reasons: it provides insufficient noise attenuation, and the turbine exhaust will require additional emissions control systems.

For purposes of this study, the noise levels of the system(s) as a package, with the current exhaust noise levels, will be discussed. This system provides a known basis for planning the noise control system.

2.1 Project Description

The proposed project will utilize four General Electric Frame 7B commercial packaged power generation systems. These systems use gas turbine engines, with auxiliary equipment, to produce 60 MW of electricity per unit. The combined power output will be a nominal 240 MW.

The Frame 7B system includes a noise control housing for the turbine and generator systems.

Lancaster Energy Facility #1 will include a Dresser Waukesa 1,547 horsepower (Hp) auxiliary engine for plant start-up (in case of grid power failure), high pressure natural gas compressor(s) for the fuel system, auxiliary equipment for emissions control, several high volume air blowers, air conditioning, and electrical control systems.

2.2 General Site Characteristics

The subject property is semi-rectangular in shape and approximately four acres in area. The vacant site is adjacent to the north side of Avenue H and the west side of Division Street. The subject property is Parcel 4 of Tentative Parcel Map 26339, which is a 20-acre property.

The only nearby development within the city limits is to the northeast; this site houses a light industrial building and an occupied mobilehome. This is reportedly a caretaker's residence, and is the nearest residential property to the proposed project.

The area that is both east of Division Street and north of Avenue H is in the County of Los Angeles, but is not within of the City of Lancaster. This is across Division Street, immediately east of subject property.

Sensitive receptors nearby include a home to the northeast in the County of Los Angeles, at 239 Avenue G-8, a mobilehome located to the north near the site, single-family residences approximately one-third of a mile to the west, across Sierra Highway, and single-family residences on Avenue H-8, approximately one-half mile to the south.

2.3 Similar Site Investigation

As part of this analysis, we incorporated noise measurements from a similar power generation station in Escondido, California which uses a single LM6000-PC, 42 MW unit. This site is located on Tulip Street, just east of the I-15 freeway and one block north of Valley Parkway. Noise measurements were taken on Monday, May 15, 2000, at 6 p.m. (The facility was visited again recently, but no noise measurements could be taken because the facility was not in operation.) This facility is not contained in a building, but is shielded within a 20-foot high security control and noise wall.

Last year, access to the inside of the facility was not available; however, there was a gap in the wall next to a gate that allowed us to take overall noise measurements using a calibrated Type 1 sound level meter. At a distance of 15 feet outside the facility wall, a measurement of 57.3 decibels (dB(A)) was recorded. Through the gap in the gate, an inside measurement of 75.4 dB(A) was recorded.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

This property is currently subject to noise from traffic on Avenue H and Division Street. To the west is Sierra Highway and the Union Pacific Railroad tracks approximately one-quarter mile to the east. The site is outside the 60 CNEL contour for the nearby Air Force Plant 42 airstrip.

Traffic noise measurements were not feasible due to strong winds during the site visits. Since the current traffic volume is low in comparison to projected traffic volumes (year 2020), only the impacts of future traffic will be addressed.

We conducted noise monitoring at four different locations on subject property, between Tuesday, May 1 and Saturday, May 5, 2001. The data are summarized in the attached spreadsheets.

3.2 Future Noise Environment

The future noise environment will include increased traffic noise from Avenue H, Division Street, Sierra Highway and the railroad, as well as noise generated from other commercial development on the adjacent parcels.

Projected traffic volumes were provided by Alan Perkins, Traffic Engineering Technician, City of Lancaster Public Works Department. According to the city's traffic model build-out for the year 2020, Avenue H between Division Street and Sierra Highway will have 7,700 westbound average daily trips (ADT) and 7,900 eastbound ADT. Using these figures, future traffic noise contours will be located at the following distances from the centerline of Avenue H: 70 dB, CNEL at 22 feet, 65 dB, CNEL at 70 feet, and 60 dB, CNEL at 198 feet. For more information, please refer to SOUND 32 Data and Results in the attachments.

Without significant new development, which is not currently foreseen, noise from the above transportation modes is not expected to increase the ambient noise level in the area by more than 3 to 5 dB.

Equipment

The following equipment was used during both the site investigation/ monitoring and the similar site investigation to measure existing noise levels:

- Larson Davis Integrating Sound Level Meter, Type I, Model 824, S/N 824A0343, with simultaneous 1/3 octave data analysis and FFT capability
- Larson Davis Integrating Sound Level Meters (2), Type I Model 820 S/N 0316 and S/N 0176, with data logging

- Larson Davis Model CAL200 Calibrator, S/N 0583
- Tripod, Tape Measure, Olympus Digital Camera

The sound level meters were calibrated immediately prior to and after use.

4.0 DEFINITIONS

- a. A-Weighted Sound Levels: Decibels (referenced to 20 microPascals), as measured with A-weighting network of standard sound level meter, abbreviated dB(A).
- b. Background Noise: Measured ambient noise level associated with all existing environmental, transportation, and community noise sources in the absence of any audible construction activity.
- c. Construction Site: For purposes of noise and vibration control requirements, the contract limits of construction. This includes Right-of-Way lines, property lines, construction Easement Boundary or property lines and Contractor staging areas outside the defined boundary lines, used expressly for construction.
- d. Daytime: The period from 6:30 a.m. to 10:00 p.m. Monday through Saturday.
- e. L_{EQ}: Shall be defined as the equivalent sound level, or the continuous sound level that represents the same sound energy as the varying sound levels, over a specified monitoring period.
- f. L_{MAX}: The RMS value of the period measurement peak noise level.
- g. Community Noise Equivalent Level (CNEL): 24-hour average, where sound levels during the evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during the night-time hours of 10 p.m. to 7 a.m. have an added 10 dB weighting (this is similar and often used interchangeably with L_{DN})
- h. Day-Night Sound Level (L_{DN}): A 24-hour average with 10 dB added weighting on the same night-time hours, but no added weighting on the evening hours.
- i. Nighttime: Periods other than daytime (as defined above), and including Sundays and legal holidays.
- j. Noise: Any audible sound which has the potential to annoy or disturb humans, or to cause an adverse psychological or physiological effect on humans.
- k. Noise Level Measurements: Unless otherwise indicated, the use of A-weighted and "slow" response of instrument complying with at least Type 2 requirements of latest revision of American National Standard Institute (ANSI) S1.4. Specification for Sound Level Meters.
- l. Noise-Sensitive Location: Location where particular sensitivities to noise exist, such as residential areas, institutions, hospitals, parks, or other environmentally sensitive areas.
- m. Octave Filtered and 1/3 Octave Filtered Data: A contiguous series of continuous sound spectra centered about the stated frequency with half of the bandwidth above and half below the stated frequency. These data are used for machinery noise analysis and barrier effectiveness calculations.
- n. Sound Transmission Class (STC): A single number rating calculated in accordance with

- ASTM E413 using values of sound transmission loss. It provides an estimate of the performance of a partition in certain common sound insulation problems.
- o. Vibration: Velocity in microinches per second. Vibration levels are expressed as velocity levels in decibels referenced to one microinch per second, abbreviated V_{dB} .
 - p. —: The sound path length difference from direct line-of-sight from the source to the receiver and the indirect path over a barrier.

5.0 SYNOPSIS OF GOVERNING REGULATIONS

5.1 City of Lancaster Noise Element to the General Plan

4.3.1(d) When proposed projects include uses that could be potentially significant noise generators, require noise analysis to be prepared by an acoustical expert, including specific recommendations for mitigation when: 1) the project is located in close proximity to noise sensitive land uses or land which is planned for noise sensitive land uses, or 2) the proposed noise source could violate the noise provisions of the General Plan or Municipal Code.

4.3.1(h) Ensure that new commercial and industrial activities (including the placement of mechanical equipment) are designed so that maximum noise level standards at the property line of adjacent uses, thereby minimizing impacts on adjacent uses . . .

5.2 City of Lancaster Noise Ordinance

The following sections of the municipal code are cited:

8.24.040 Loud, unnecessary and unusual noises prohibited - Construction and building.

Except as otherwise provided in this chapter, a person at any time on Sunday or any day between the hours of eight p.m. and sunrise shall not perform any construction or repair work of any kind upon any building or structure or perform any earth excavating, filling or moving where any of the foregoing entails the use of any air compressors, jack hammer, power driven drill, riveting machine, excavator, diesel-powered truck, tractor, or other earth-moving equipment, hard hammers on steel or iron or any other machine tool, device or equipment which makes loud noises within five hundred (500) feet of an occupied dwelling, apartment, hotel, mobilehome, or any other place of residence.

17.16.220 - Subsection 18. Noise.

Uses which generate noise by the nature of their function and/or processes shall be required to demonstrate that the noise levels emitted from the use shall not exceed 65 dBA at any property line which abuts a commercial or residential zone or use.

5.3 County of Los Angeles Noise Ordinance

12.08.390 Exterior noise standards - Citations for violations authorized when.

A. Unless otherwise herein provided, the following exterior noise levels shall apply to all receptor properties within a designated noise zone:

County of Los Angeles Noise Ordinance 12.08 390			
Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level dB(A)
I	Noise Sensitive Area	Anytime	45
II	Residential Properties	10:00 p.m. to 7:00 a.m. (Nighttime)	45
		7:00 a.m. to 10:00 p.m. (Daytime)	50
III	Commercial Properties	10:00 p.m. to 7:00 a.m. (Nighttime)	55
		7:00 a.m. to 10:00 p.m. (Daytime)	60
IV	Industrial Properties	Anytime	70

B. Unless otherwise herein provided no person shall operate or cause to be operated, any source of sound at any location within the unincorporated county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level, when measured on any other property either incorporated or unincorporated, to exceed any of the following noise standards.

Standard No. 1 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level from subsection A of this section; or, if the ambient L_{50} exceeds the foregoing level, then the ambient L_{50} becomes the exterior noise level for Standard No. 1.

Standard No. 2 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from subsection A of this section plus 5 dB; or, if the ambient L_{25} exceeds the foregoing level, then the ambient L_{25} becomes the exterior noise level for Standard No. 2.

Standard No. 3 shall be the exterior noise level which may not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level

from subsection A of this section plus 20 dB; or, if the ambient $L_{8.3}$ exceeds the foregoing level, then the ambient $L_{8.3}$ becomes the exterior noise level for Standard No. 2.

Standard No. 4 shall be the exterior noise level which may not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from subsection A of this section plus 15 dB; or, if the ambient $L_{1.7}$ exceeds the foregoing level, then the ambient $L_{1.7}$ becomes the exterior noise level for Standard No. 4.

Standard No. 5 shall be the exterior noise level which may not be exceeded for any period of time. Standard No. 4 shall be the applicable noise level from subsection A of this section plus 20 dB; or, if the ambient L_0 exceeds the foregoing level, then the ambient $L_{0.7}$ becomes the exterior noise level for Standard No. 4.

C. If the measurement location is on a boundary property between two different zones, the exterior noise level utilized in subsection B of this section to determine the exterior standard shall be the arithmetic mean of the exterior noise levels in subsection A of the subject zones. Except as provided in this subsection C, when an intruding noise source originates on an industrial property and is impacting another noise zone, the applicable exterior noise level as designated in subsection A, shall be the daytime exterior noise level for the subject receptor property.

5.4 Local Area Zoning

The site and all adjacent properties are zoned H1 for heavy industry. The nearby unincorporated area to the east is zoned D-2-1, which allows light industrial land use.

5.5 Site-Controlling Noise Regulations

The City of Lancaster Noise Ordinance requires that no noise source shall create noise levels which are above 65 dB(A) at the property line of any residential or commercial land use or zone. There is a residential property use to the northeast of the planned installation. Therefore, noise levels will be limited to 65 dB(A) at 400 feet.

Note: While the City of Lancaster Noise Ordinance does not provide a noise limit for heavy industrial property, a reasonable property line standard common to many municipalities is 70 to 75 dB(A).

6.0 IMPACTS

Analysis Notes

To determine the combined noise levels when the noise level of two contributing sources are known, refer to Table 2; this equation is also valid when used successively for each additional noise source beyond the first two. The reverse procedure can be used to estimate the contribution

of one source, when the contribution of another concurrent source is known and the combined noise level is known. These methods can be used for L_{EQ} or for other metrics (such as L_{dn} or CNEL), provided that the same metric is used for all components.

Table 2. Sound Level Addition for Two Noise Sources	
Difference	Add to Higher Value
0 - 1 dB	3 dB
2 - 3 dB	2 dB
4 - 9 dB	1 dB
>10 dB	0 dB

Noise data are typically supplied in two different formats: sound pressure and sound power.

The first format, sound pressure, is the level which would be heard or recorded by a sound level meter at a distance from a noise source. The second format, sound power, provides the basis for calculation of the sound pressure at a distance. The sound power format is the standard for presentation of data for heating, ventilating, and air conditioning equipment. The reader who is unfamiliar with data presented in this format should be aware that the sound power values appear to be significantly higher than the sound pressure values, because it includes all the sound emitted in all directions.

Information analyzed in this report is provided by the equipment manufacturers, and may have been provided in either format.

6.1 Potential Noise Sources

Noise sources associated with the proposed project can be classified into three categories:

- A. Construction noise
- B. Stationary mechanical equipment operation
 - a. Turbine engine air intake
 - b. Direct noise radiation from the turbine/generator enclosure
 - c. Turbine engine exhaust
 - d. Power failure start up engine
 - e. High pressure reciprocating natural gas compressor(s)
 - f. Absorption chillers and pumps

Note: This report does not address the numerous smaller noise sources such as ventilation blowers, air compressors, lube oil pumps, etc. The noise levels from these multiple smaller

units, while presenting the potential for significant noise impacts, is easily controlled pre and post installation with enclosures and small silencers.

- C. Mobile noise sources, generally consisting of noise from cars and trucks

6.2 Description of Noise Sources

Construction noise

The attachment entitled “Construction Equipment Noise Levels” provides information on typical noise levels of construction activities. No extreme noise level generators (i.e., pile drivers or hoe rams) are anticipated for this construction.

Construction hours will be limited to the normal, allowable daytime hours stated in the City of Lancaster Noise Ordinance: 6:30 a.m. to 10:00 p.m., Monday through Saturday.

Therefore, construction noise will not be analyzed further.

Stationary mechanical equipment operation

The stationary mechanical equipment could produce noise levels of 85 to 90 dB(A) at the property line, if noise control mitigation measures are not included in the plant design.

The attached spreadsheet noted as S1 provides turbine octave noise data, unweighted overall noise data, and A-weighted noise data.

- A. The direct noise radiation from the turbine/generator enclosure (far-field) noise level is not available; this unit analysis is based on noise from a LM 6000 unit, which is 54.8 dB(A) at 400 feet or 68.8 dB(A) at 80 feet (approximate property line).
- B. The unsilenced turbine engine air intake (far-field) noise level is 109 dB(A) at 60 feet (approximate property line).
- C. The unsilenced turbine engine exhaust would produce approximately 107.6 dB(A) at 80 feet (approximate property line).
- D. The high-pressure reciprocating natural gas compressor is estimated to operate at 95 dB(A), at 3 feet from the unit.
- E. The absorption chillers and pumps have not yet been specified; therefore, actual data are not available. However, similar noise level units are routinely used in office and commercial construction, and the noise is typically controlled through use of a noise wall.

- F. The power failure start up engine will not normally be used, but will be included for analysis purposes. Unsilenced exhaust from the engine will produce approximately 95.7 dB(A) at 75 feet; the engine noise will be approximately 95 dB(A) at 10 feet.

Mobile noise sources

Mobile noise sources, after construction is complete, will be minimal. Site access will be limited to normal operations, maintenance, and repairs vehicles. These operations and maintenance vehicles will contribute negligible overall noise to the area and will not be further addressed.

6.3 Impacts to Neighboring Areas

The General Electric Frame 7B commercial packaged power generation system, with the complete manufacturer's noise control package, would produce approximately 107.6 dB(A) at the property line. With the addition of the unmitigated noise produced by the high-pressure gas compressor(s) and chillers, the unmitigated property line noise level would be between 107.0 and 108.0 dB(A).

7.0 MITIGATION

Noise mitigation for this project would consist of three components:

- Equipment and Design Requirements
- Operational Requirements
- Procedural Requirements

7.1 Equipment and Design Requirements

The noise produced by this plant can be reduced to levels below the nearby residential property line limitation, 65.0 dB(A), through the implementation of the mitigation measures in the following section.

Portions of the project require special consideration for the noise mitigation systems. These include:

- A. The 900 degree (Fahrenheit) system exhaust. This will require silencing systems designed to ensure ongoing system functionality.
- B. The high-pressure natural gas compressor. Open air ventilation requirements are mandated by the State of California; these must be maintained by the noise quieting system.

Silencing for this system will utilize conventional techniques. The application of active noise cancellation was briefly explored as part of the overall noise control planning, but due to economic and reliability issues with current technology, it is not feasible for this project. The technique of active noise cancellation, through the use of computer-controlled generation of an inverted noise signal, is currently primarily used in smaller controlled situations, such as ventilation fan noise. It should be noted that both cost and reliability become an issue with active noise control applications as noise volumes increase.

The attached spreadsheets S2 and S3 provide the silencing details for the turbine and piston engine exhaust. A single silenced turbine property line noise level is expected to be 69.5 dB(A), which reduces to approximately 59.1 dB(A) at the nearest impacted residence. The noise level of three units at the residence would be approximately 63.9 dB(A) [the fourth turbine from any location will be distant enough to add only 0.1 to 0.2 dB(A)].

The high pressure natural gas pumps will need to be contained within a noise control enclosure to control their noise emissions. Without, specific octave noise data exact enclosure heights cannot be determined. However, there noise level should be reduced to less than 60 dB(A) with a noise control enclosure at least five feet above there highest point.

The power failure start-up engine exhaust will be mitigated to less than 60 dB(A) at 200 feet, and the engine will be contained within a building to control engine noise. Therefore, even though its use will be infrequent, it will maintain the required property line noise limits.

Note: All noise control enclosures should be made of either a manufactured noise shielding/absorbing material or have noise absorbing material of at least three-inch thickness applied to the surface facing the noise source

7.2 Operational Requirements

The 65.0 dB(A) residential property line maximum level is a 24-hour requirement; therefore, no operational limitation requirements are anticipated.

7.3 Procedural Requirements

- A. Attached is a data sheet from onsite monitoring performed prior to any project construction activities. The column headed "Towyard" is the towing yard on Avenue H-8 near the Paiute Intermediate School. The column headed "Trailer" is the commercial property with a mobilehome adjacent to the northeast corner of the project. The column headed "Grapevine" is a residence located at 239 Avenue G-8 (in the County of Los Angeles). The column headed "Brickwall" is the wall adjacent to the south side of Avenue H, west of 7th Street West.

The noise levels are significantly higher than might be ordinarily expected in this currently rural area. These high levels are attributed to extremely windy conditions during the monitoring period. It should be noted however, that these elevated noise levels are relevant to the area.

- B. Acoustical tests of the proposed plant will be completed as soon as practical, during and/or after the construction period. Additional noise control measures shall be implemented, if the measured sound levels at the residential property line exceed 65.0 dB(A). Noise monitoring procedures are as follows:
- Acoustical consultant will utilize a Type I (Precision) or Type 2 (General Purpose) Sound Level Meter meeting the requirements of the latest revision of American National Standard Institute (ANSI) S1.4, Specification for Sound Level Meters.
 - Acoustical instruments will be field calibrated according to the manufacturer's specifications, prior to and following use. Calibrated sound level meters, microphones, and calibrators, with certified laboratory conformance per the manufacturer's specifications, will be used.
 - All measurements will use the A-weighting network and the SLOW response of the sound level meter, unless otherwise specified.
 - Impulsive or impact noises will be measured using the C-Weighting network and the FAST response of the sound level meter.
 - All measurement microphones will be fitted with an appropriate windscreen, and measurements will be taken at least six feet away from the nearest reflective surface.
 - Noise level measurement periods for intermittent noise shall be a minimum of 15 minutes.
 - If, in the estimation of the consultant, outside noise sources contribute significantly to the measured noise level, the measurements will be repeated with the same outside source contributions when construction is inactive to determine the background noise level.
 - Noise monitoring locations will be clearly identified on a drawing, and should include those locations where ambient noise measurements were conducted during this preliminary study. This monitoring should be conducted when the plant reaches 80% capacity.
- C. Final acoustical tests of the plant shall be conducted upon the completion of construction. If the noise level at the residential property line exceeds 65.0 dB(A), or any un-weighted octave bands exceed 80.0 dB, plant operations shall cease and the plant design shall be modified to achieve the required level of noise reduction. In this case, a new acoustical analysis shall be prepared.
- D. A Noise Monitoring Report shall be submitted to the City of Lancaster upon completion of the acoustical tests. The noise measurement reports shall include:

- Date, time, location and duration of measurement
 - Instrument used
 - Calibration information
 - Sound level in dB(A) L_{EQ}
 - Notes
 - Name and signature of acoustician
- E. All construction equipment should be maintained in good condition with factory-installed, or equivalent, noise control systems.

8.0 CONCLUSIONS

If the site is limited to a maximum nearby residential property line noise limit of 65.0 dB(A) L_{EQ} , the current daytime average onsite noise level would increase from its approximately 55.0 dB(A) L_{EQ} from other outside sources to 65.0. dB(A) L_{EQ} .

The Frame 7B units will require additional mitigation, beyond that provided by the manufacturer. However, the level of additional attenuation required may be achieved with implementation of conventional noise reduction techniques as part of the system's design.

With the implementation of noise mitigation, noise from all sources of the project can be controlled to levels in compliance with the noise regulations of the City of Lancaster. The local noise environment will receive only a moderate impact. However, the nearby residential use will experience noise levels in compliance with zoning, but higher than they are currently used to.

The similar facility in Escondido provides an example of how this type of facility can be built in compliance with the applicable noise regulations.

9.0 CERTIFICATION

The findings and recommendations of this acoustical analysis report are a true and factual analysis of the potential environmental effects associated with the proposed development. This report was prepared by Charles Terry and Douglas K. Eilar.

Sincerely,

DOUGLAS EILAR & ASSOCIATES

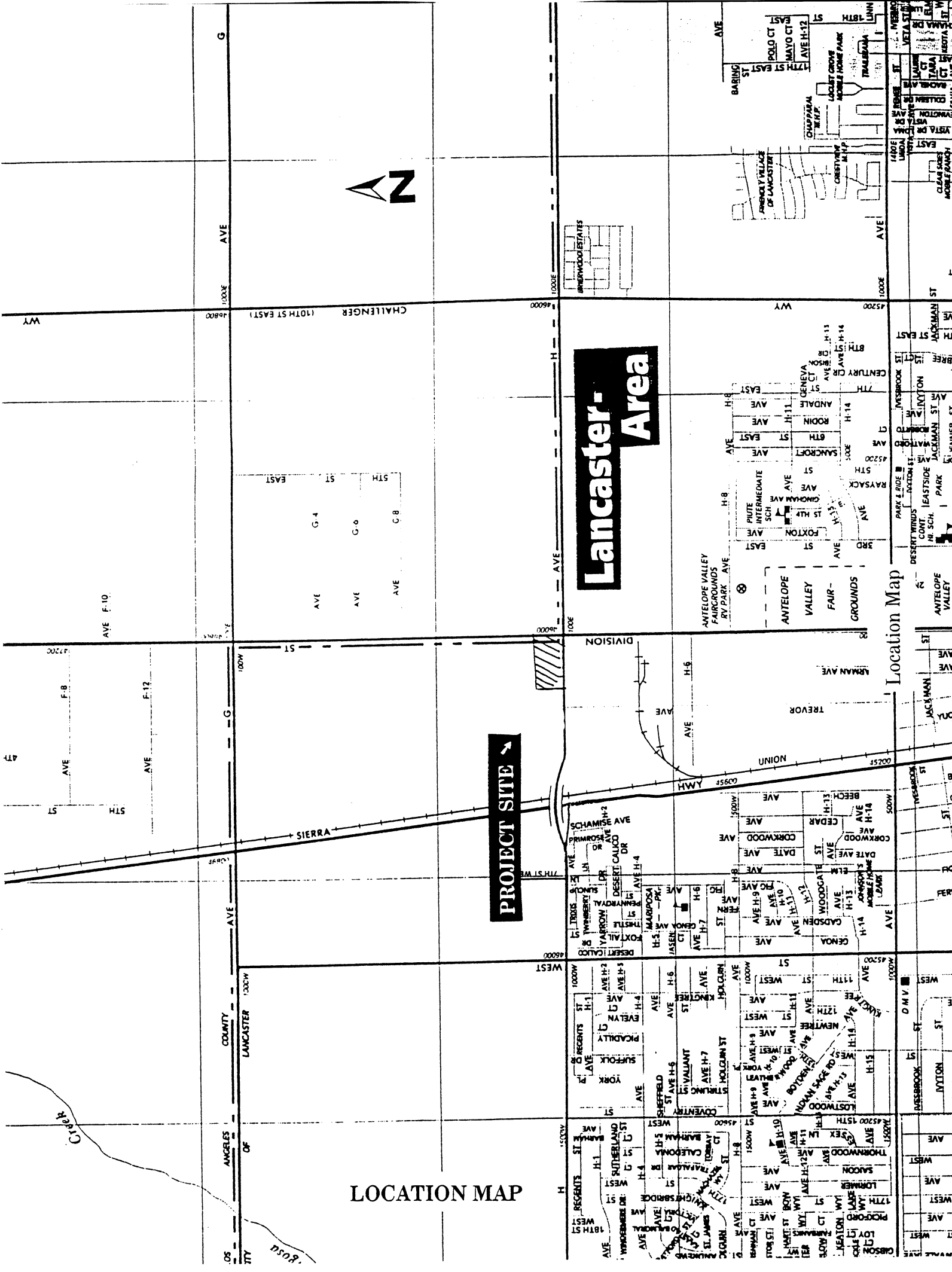
Charles Terry, Mechanical Engineer
Consultant in Acoustics, Investigator

Douglas K. Eilar
Principal

CT:elm

10.0 REFERENCES

1. City of Lancaster Noise Ordinance
2. City of Lancaster Noise Element to the General Plan
3. County of Los Angeles Noise Ordinance

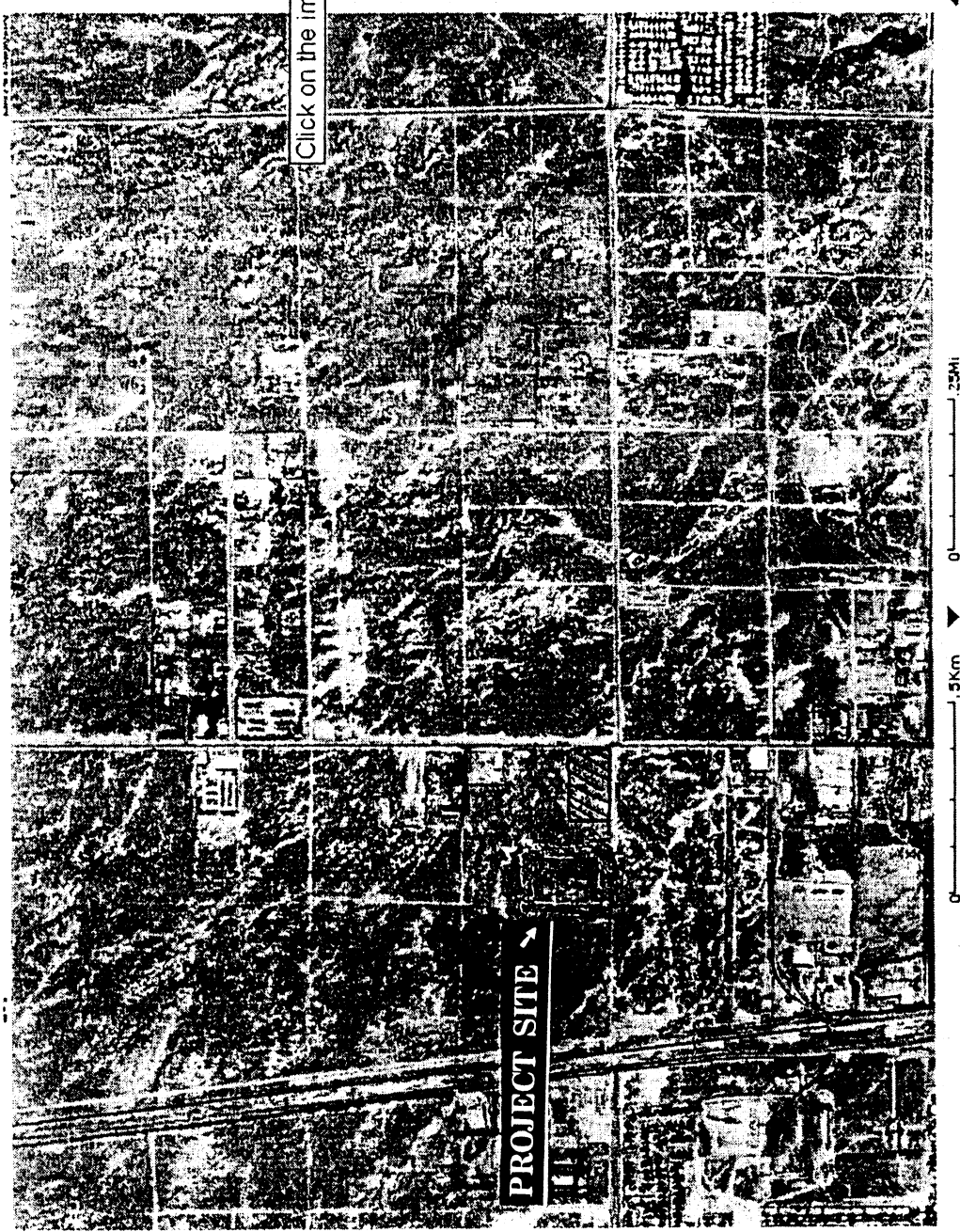


**Lancaster-
Area**

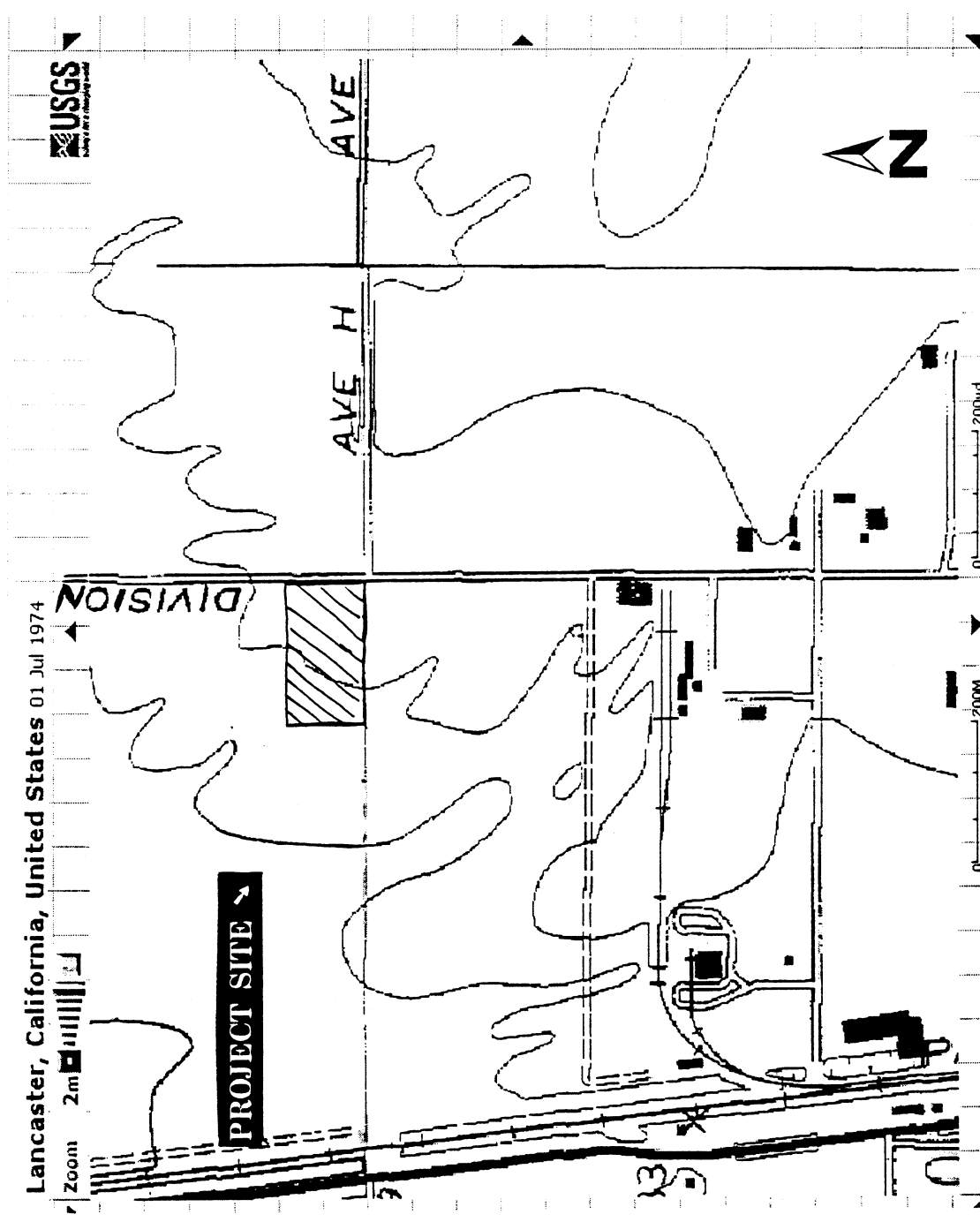
PROJECT SITE

LOCATION MAP

Location Map



SATELLITE AERIAL PHOTOGRAPH



TOPOGRAPHIC MAP

S&S ENERGY PRODUCTS
A GE Power Systems Business
16415 Jacintoport Blvd.
Houston, TX 77015

Customer:
 Description: LM6000 Turbine Generator Sound Power Levels
 Project:
 Date: 18 OCTOBER 2000

Unsilenced, In-duct Sound Power Levels for the LM6000 Turbine Exhaust -- at Diffuser Flange.

SOUND POWER LEVELS OF THE LM6000 Turbine Combustion Exhaust.

Item Description	Octave Band Center Frequency (Hz)										Lin.	A-Wt.
	31.5	63	125	250	500	1K	2K	4K	8K			
Sound Power Levels (PWL's) in dB re 10 ⁻¹² Watts												
UNSILENCED COMBUSTION EXHAUST												
In-Duct Sound Power Levels at the Turbine Diffuser Flange (Values do not include Stack Exit End-Reflection Loss):												
PWL: LM6000-PC Exhaust at FULL-LOAD (Stack Directivity Not Included)	137	138	137	140	137	126	122	120	109	145.1	136.7	<---- NOTE: 1 st
NOTE: The above figures are what we use to represent PWL's "at the diffuser flange", inside the turbine exhaust duct. The low-frequency numbers are somewhat elevated, to include self-generated noise of the silencer at the stack base, for our typical standard BRADEN 45' exhaust stack. Stack end reflection loss is included in the above figures. Stack end reflection attenuation is assumed to be as follows:												
DIL: DIL - Stack End Reflection Loss (dB)	6	3	1	0	0	0	0	0	0			
(Subtract these values from the above figures to see "emitted" PWL's outside a stack of I.D. 9-ft., assuming												
PWL: LM6000-PC Exhaust at FULL-LOAD (according to the GE Installation Design Manual)	124	133	139	142	144	139	131	122	109	147.8	143.9	
NOTE: These figures are lower in the low-frequency octave bands -- this may be due to elimination of turbulence at the combustion exhaust exit, plus it may already include end reflection losses.												
They also do not state if these figures are in-duct (i.e. at the diffuser flange) or emitted outside the flange or												

CONSTRUCTION EQUIPMENT NOISE LEVELS (3 PAGES)

GE Aero Energy Products
A GE Power Systems Business
16415 Jacintoport Blvd.
Houston, TX 77015

CUSTOMER
PROJECT DESCRIPTION
PROJECT NUMBER
DATE

LM6000 Std. Package - 90 dBA
6 OCTOBER 2000

RE: Noise Model, for ONE (1) Standard LM6000-PC Package, 60-Hz.
- Main Turbine Generator Unit Only, with STANDARD "90 dBA" equipment. Full-Load Operation Condition.
- No Aux Skid or other equipment skids included. VBV closed at full load.
- NOTE: This set of Data: All Positions 5' above base of Skid. Combustion Exhaust noise EXCLUDED.

NEAR-FIELD POSITIONS (ONE (1) UNIT OUTDOORS)

NEAR-FIELD POSITIONS (ONE (1) UNIT OUTDOORS)			Octave-Band Center Frequency (Hz)								Lin.	A-Wt.	
Position	31	63	125	250	500	1K	2K	4K	8K				
NOTE Actual Position Locations are ADJUSTABLE.													
SPL's in dB re 20 Micropascals													
Location descriptions below indicate spreadsheet design positions.													
M-1:	Lt. Side, 66' 7" from gen. end, 3' to side of package	92	89	89	79	75	71	70	71	65	95	79.6	1
	A-Wt Levels:	53	63	73	70	72	71	71	72	64			
M-2:	Lt. Side, 52' 7" from gen. end, 3' to side of package	94	92	91	81	79	72	73	75	68	98	82.4	2
	A-Wt Levels:	55	66	75	72	76	72	74	76	67			
M-3:	Lt. Side, 30' 8.5" from gen. end, 3' to side of package	96	95	94	84	81	77	76	78	70	100	85.4	3
	A-Wt Levels:	57	69	78	75	78	77	77	79	69			
M-4:	Lt. Side, 6' 9" from gen. end, 3' to side of package	96	93	93	81	79	76	72	72	64	99	82.9	4
	A-Wt Levels:	57	67	77	72	76	76	73	73	63			
M-5:	Rt. Side, 6' 5" from gen. end, 3' to side of pkg.	96	93	93	81	79	76	72	72	64	99	83.0	5
	A-Wt Levels:	57	67	77	72	76	76	73	73	63			
M-6:	Rt. Side, 24' 3" from gen. end, 3' to side of pkg.	98	96	94	84	80	77	75	77	71	102	84.9	6
	A-Wt Levels:	59	70	78	75	77	77	76	78	70			
M-7:	Rt. Side, 38' 2" from gen. end, 3' to side of pkg.	98	96	93	84	80	76	76	78	72	101	85.0	7
	A-Wt Levels:	59	70	77	75	77	76	77	79	71			
M-8:	Rt. Side, 58' 11" from gen. end, 3' to side of Pkg.	95	92	92	83	80	75	74	75	69	98	83.4	8
	A-Wt Levels:	56	66	76	74	77	75	75	76	68			
Number average over all positions:		96	93	92	82	79	75	73	75	68	99	83.2	
Composite worst-case maximum:		98	96	94	84	81	77	76	78	72	102	85.6	
SPL: Expected Maximum, Not to Exceed:		99	97	94	84	82	78	76	78	72	102	86.0	86.0

Quantity of Turbine Generator Units: 1 Units

Correction Factor: 0.0 dB

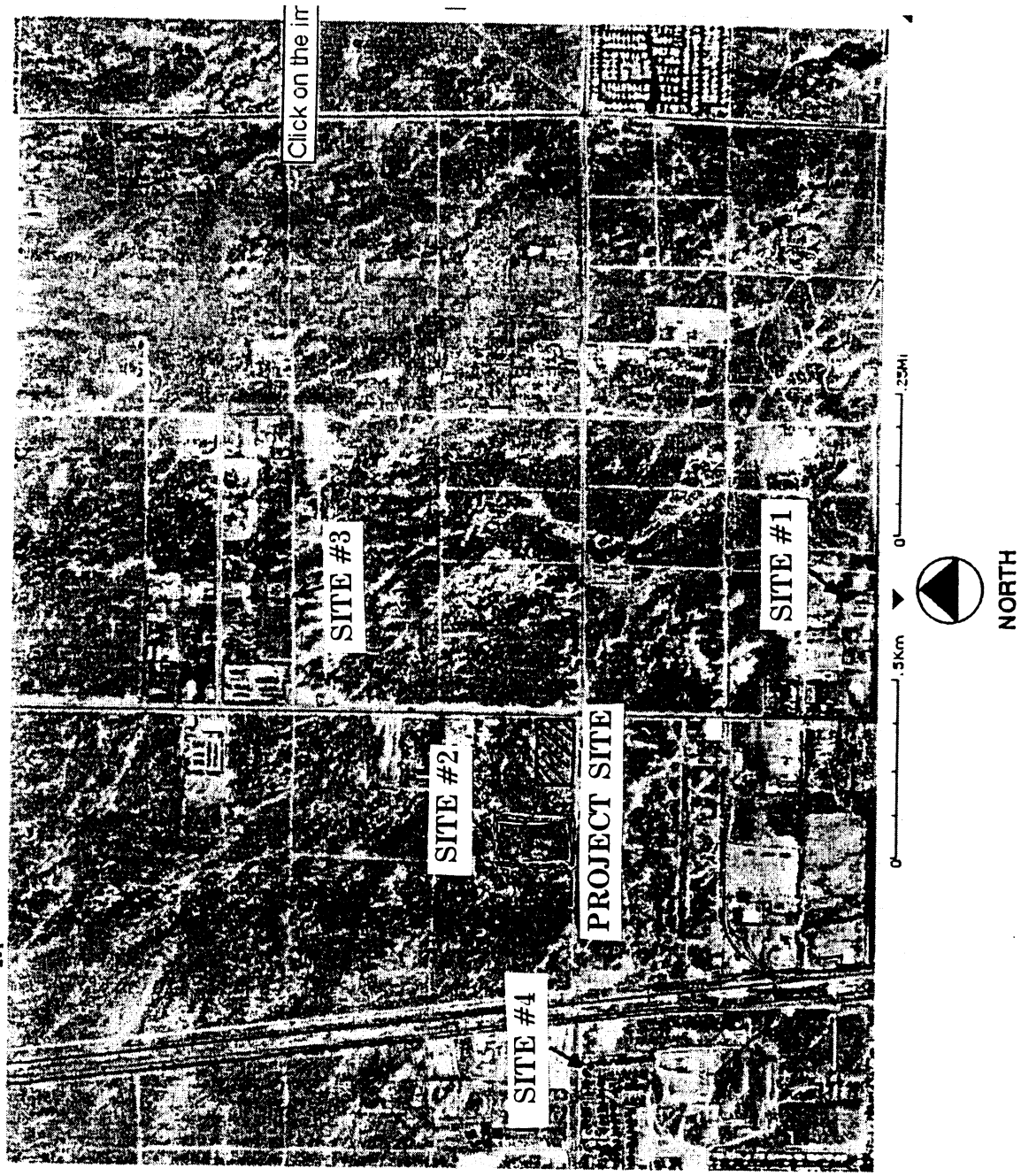
FAR-FIELD POSITIONS at Distance: 121.96 m.
400.0 Ft.

FAR-FIELD POSITIONS at Distance:		121.36 m. 400.0 Ft.		Octave-Band Center Frequency (Hz)								
Position		31	63	125	250	500	1K	2K	4K	8K	Lin.	A-Wt.
SPL's in dB re 20 Micropascals												
F-1: Left Side (Cust. Connection Side)		70	67	66	52	46	43	43	44	34	73	53.8
F-2: Generator End		69	64	64	51	45	44	43	44	28	71	52.5
F-3: Right Side (Skids & Access Side)		71	67	67	53	48	45	44	44	36	73	54.9
F-4: Turbine Exhaust End		69	64	67	52	46	43	43	42	33	72	53.7
Number average over all positions:		69	65	66	52	46	44	43	44	33	72	53.7
Composite worst-case maximum:		71	67	67	53	48	45	44	44	36	73	54.9

NEAR-FIELD POSITIONS (UNIT INSIDE BUILDING):

For the corrections below, see ROOMCONST.XLS spreadsheet: Octave-Band Corrections, Inside Building (dB)											
Octave-Band Correction (Penalty) for building:											
4.1 2.6 2.0 1.5 1.5 1.6 1.7 1.5 1.4											
Octave-Band Center Frequency (Hz)											
Position	31	63	125	250	500	1K	2K	4K	8K	Lin.	A-Wt.
SPL's in dB re 20 Micropascals											
M-1: Lt. Side, 86' 7" from gen. end, 3' to side of package	96	91	91	80	77	72	72	72	67	98	81.3
A-Wt Levels:	57	65	75	71	74	72	73	73	66		
M-2: Lt. Side, 52' 7" from gen. end, 3' to side of package	99	95	93	83	80	74	74	76	70	101	84.1
A-Wt Levels:	60	69	77	74	77	74	75	77	69		
M-3: Lt. Side, 30' 8.5" from gen. end, 3' to side of package	101	97	96	85	83	79	77	79	71	103	87.1
A-Wt Levels:	62	71	80	76	80	79	78	80	70		
M-4: Lt. Side, 6' 9" from gen. end, 3' to side of package	100	96	95	83	80	78	74	74	65	102	84.6
A-Wt Levels:	61	70	79	74	77	78	75	75	64		
M-5: Rt. Side, 6' 5" from gen. end, 3' to side of pkg.	100	96	95	83	81	78	74	74	66	102	84.7
A-Wt Levels:	61	70	79	74	78	78	75	75	65		
M-6: Rt. Side, 24' 3" from gen. end, 3' to side of pkg.	103	99	96	85	82	78	77	78	72	105	86.6
A-Wt Levels:	64	73	80	76	79	78	78	79	71		
M-7: Rt. Side, 38' 2" from gen. end, 3' to side of pkg.	102	98	95	85	82	77	77	79	73	104	86.7
A-Wt Levels:	63	72	79	76	79	77	78	80	72		
M-8: Rt. Side, 58' 11" from gen. end, 3' to side of Pkg.	99	95	94	84	81	76	76	76	71	101	85.1
A-Wt Levels:	60	69	78	75	78	76	77	77	70		
Number average over all positions:	100	96	94	84	81	77	75	76	69	102	84.9
Composite worst-case maximum:	103	99	96	85	83	79	77	79	73	105	87.3

Construction Equipment Noise Levels at 50 Feet						
	60	70	80	90	100	110
Compactors		---				
Front Loaders		-----				
Backhoes		-----				
Tractors		-----				
Scrapers, Graders		-----				
Pavers			---			
Trucks			-----			
Concrete Mixers			-----			
Concrete Pumps			---			
Cranes (Moveable)			-----			
Cranes (Derrick)			---			
Pumps		-----				
Generators		-----				
Compressors			-----			
Pneumatic Wrenches			---			
Jack Hammers & Rock Drills			-----			
Pile Drivers (Peaks)					-----	
Vibrators		-----				
Saws		-----				



AERIAL PHOTOGRAPH WITH
MONITORING SITE LOCATIONS

		TOW YARD		TRAILER		GRAPEVINE		BLOCK WALL	
		Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
1 May 01	11:00 AM	58.0	82.9						
	12:00 PM	47.6	63.1	64.5	95.9				
	01:00 PM	48.8	67.2	50.6	63.2				
	02:00 PM	50.1	59.8	54.6	69.0				
	03:00 PM	53.3	67.1	58.6	73.3				
	04:00 PM	57.2	69.6	64.3	75.8				
	05:00 PM	57.0	72.6	66.9	81.7				
	06:00 PM	58.0	72.3	66.4	77.9				
	07:00 PM	54.9	70.4	64.8	77.8				
	08:00 PM	49.1	62.7	60.5	77.0				
	09:00 PM	49.7	72.1	54.3	67.2				
	10:00 PM	48.4	61.8	51.5	67.6				
2 May 01	11:00 PM	50.3	70.2	54.9	73.8				
	12:00 PM	48.4	67.3	51.6	67.8				
	01:00 AM	49.9	66.1	53.6	67.6				
	02:00 AM	47.2	63.1	54.7	69.4				
	03:00 AM	49.9	66.7	55.3	69.1				
	04:00 AM	55.2	69.9	60.3	74.8				
	05:00 AM	54.8	68.9	65.6	79.6				
	06:00 AM	55.0	69.9	64.0	76.1				
	07:00 AM	57.1	73.6	67.0	79.0				
	08:00 AM	54.2	68.0	62.2	75.9				
	09:00 AM	47.1	58.8	55.1	72.3				
	10:00 AM	54.6	73.1	58.6	73.5				
	11:00 AM	53.4	72.3	57.9	71.4				
	12:00 PM	47.6	62.0	53.8	66.3				
	01:00 PM	49.1	63.4	53.2	64.7				
	02:00 PM	49.6	68.1	55.2	70.2				
	03:00 PM	50.6	61.7	55.3	67.0				
	04:00 PM	50.7	68.0	55.3	68.3				
	05:00 PM	50.2	64.3	58.0	69.7				
	06:00 PM	50.9	73.7	54.6	70.7				
	07:00 PM	44.5	65.5	52.1	69.7				
	08:00 PM	43.9	60.5	46.6	62.0				
	09:00 PM	43.8	62.2	49.8	64.6				
	10:00 PM	39.3	54.7	58.1	82.5				
	11:00 PM	39.3	55.9	54.0	76.6				
	12:00 PM	37.6	50.3	47.8	62.6				
3 May 01	01:00 AM	36.3	47.1	44.6	66.3				
	02:00 AM	37.2	49.2	59.1	89.7				
	03:00 AM	37.1	56.8	46.6	63.5				
	04:00 AM	38.7	65.3	39.4	56.3				
	05:00 AM	38.0	50.8	53.2	78.1				
	06:00 AM	41.3	55.5	48.7	62.8				
	07:00 AM	47.9	72.0	52.4	71.0				
	08:00 AM	51.1	66.5	49.9	67.5				
	09:00 AM	55.8	75.2	53.3	72.0				
	10:00 AM	54.1	76.0	51.1	68.1				
	11:00 AM	64.1	80.3	65.7	92.4				
	12:00 PM					54.3	76.4	67.6	67.6
	01:00 PM					54.7	69.1	66.7	66.7
	02:00 PM					55.6	67.9	66.5	66.5
	03:00 PM					52.8	67.0	68.1	68.1
	04:00 PM					44.5	62.1	67.7	67.7
	05:00 PM					43.7	63.7	65.4	65.4
	06:00 PM					40.3	57.6	63.0	63.0
	07:00 PM					39.5	53.0	62.2	62.2
	08:00 PM					47.3	69.8	62.1	62.1
	09:00 PM					38.0	59.7	62.3	62.3
	10:00 PM					39.8	60.4	59.4	59.4
	11:00 PM					39.3	52.9	58.5	58.5
	12:00 PM					37.9	51.1	59.3	59.3
4 May 01	01:00 AM					47.3	61.9	53.9	53.9
	02:00 AM					47.2	70.0	55.1	55.1
	03:00 AM					49.7	71.6	57.4	57.4
	04:00 AM					41.4	63.2	60.4	60.4
	05:00 AM					47.7	60.6	65.1	65.1
	06:00 AM					48.7	67.9	66.6	66.6
	07:00 AM					54.4	74.2	67.1	67.1
	08:00 AM					48.9	66.7	64.9	64.9
	09:00 AM					44.2	68.9	63.8	63.8
	10:00 AM					45.2	66.2	64.4	64.4
	11:00 AM					44.2	61.2	65.1	65.1
	12:00 PM					47.3	66.8	63.6	63.6

**MONITORING RESULTS FROM
FOUR MONITORING LOCATIONS
(2 PAGES)**

Sound 32 Data and Results

Traffic Information			
Roadway Name	Speed Limit	Current ADT (average daily trips)	Projected ADT (average daily trips)
Avenue H	45 mph	1,700 ADT	7,900 ADT

Traffic Conditions					
Roadway Name	Condition	Total %	Cars (hourly)	Medium Trucks (hourly)	Heavy Trucks (hourly)
		ADT			
Avenue H	Current	100	98.5%	1.0%	0.5%
		1700	97	0	0
	Future	100	98.5%	1.0%	0.5%
		7900	451	4	2

Current Traffic Study

City of Lancaster Public Works Department
 Alan Perkins @ 661-723-6154
 Avenue H (between Division Street and Sierra Highway)

Future Projected Traffic Study

City of Lancaster Public Works Department
 Alan Perkins @ 661-723-6154
 Avenue H (between Division Street and Sierra Highway)

Sound 32 Raw Data for Caltrans Version of Stamina2/Optima

Future ADT Traffic Data to Produce Noise Contours

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : FUTURE.TXT
BARRIER COST FILE : CALIF\$.DTA
DATE : 05-08-2001

TRAFFIC DATA

LANE NO.	AUTO VPH	MPH	MEDIUM TRKS VPH	MPH	HEAVY TRKS VPH	MPH	DESCRIPTION
1	451	45	4	45	2	45	avenue h

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	0.0	0.0	L1 P1
			1000.0	0.0	0.0	L1 P2

RECEIVER DATA

REC.NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	22.0	5.0	67	500	R-1
2	0.0	70.0	5.0	67	500	R-2
3	0.0	198.0	5.0	67	500	R-3

RECEIVER	LEQ
R-1	70.1
R-2	65.0
R-3	60.0

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 2.0 DBA

Hanover Gas Turbine Power Generator, Lancaster

Evaluated Distance	200.0	SWL = Sound Power Level					SPL = Sound Pressure Level				
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Octave Band Center Frequency (Hz.)											
31.5	63	125	250	500	1000	2000	4000	8000	Distance		

Right Side SPL(A)	71	67	67	53	48	45	44	44	36	400
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1	
Octave Sum	31.2	40.7	51.2	44.7	44.5	44.9	45.4	45.3	35.1	
Overall SPL(A)	54.8									
Calculated SPL(A)	60.9									

Turbine Exhaust SWL	137	139	141	143	142	140	138	134	128	
SPL = SWL + 20 Log r - .5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	
SPL / Distance	91.5	93.5	95.5	97.5	96.5	94.5	92.5	88.5	82.5	
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1	
Exhst Sil D.I.L.	-7.5	-10.4	-13.3	-16.1	-19	-21.9	-24.8	-27.7	-30.5	
Octave Sum	44.6	56.9	66.1	72.8	74.3	72.6	68.9	61.8	50.9	
Calculated SPL(A)	78.9									

Turbine Intake SWL	129	129	122	121	125	136	138	138	138	
SPL = SWL + 20 Log r - .5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	
SPL / Distance	83.5	83.5	76.5	75.5	79.5	90.5	92.5	92.5	92.5	
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1	
Intk Silencer D.I.L.	-6	-10	-13	-20	-34	-44.4	-44.4	-32.4	-17.4	
Octave Sum	38.1	47.3	47.4	46.9	42.3	46.1	49.3	61.1	74.0	
Calculated SPL(A)	74.2									

EPI Gas Turbine Power Generator(s), Lancaster, Frame 7B Units

A1051

S1

SWL = Sound Power Level		SPL = Sound Pressure Level								
UNSILENCED		Octave Band Center Frequency (Hz.)								
UNIT NOISE		31.5	63	125	250	500	1000	2000	4000	8000
Right Side SPL(A)	70.6	66.9	67.3	53.3	47.7	44.9	44.2	44.3	36.2	400
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	Feet Base
Octave Sum	31.2	40.7	51.2	44.7	44.5	44.9	45.4	45.3	35.1	Distance
Overall SPL(A)	54.8									

Turbine Exhaust SWL	137.0	139.0	141.0	143.0	142.0	140.0	138.0	134.0	128.0	
SPL = SWL + 20 Log r - .5	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	
SPL / Distance	99.4	101.4	103.4	105.4	104.4	102.4	100.4	96.4	90.4	
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	
Octave Sum	60.0	75.2	87.3	96.8	101.2	102.4	101.6	97.4	89.3	

Turbine Intake SWL	129.0	129.0	122.0	121.0	125.0	136.0	138.0	138.0	138.0	
SPL = SWL + 20 Log r - .5	35.1	35.1	35.1	35.1	35.1	35.1	35.1	35.1	35.1	
SPL / Distance	93.9	93.9	86.9	85.9	89.9	100.9	102.9	102.9	102.9	
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	
Octave Sum	54.5	67.7	70.8	77.3	86.7	100.9	104.1	103.9	101.8	

Calculated SPL(A) At Property Line				Calculated SPL At Nearest Residence			
Turbine Body	68.8	dB(A) at	80	Feet	Distance to Property	200	Feet
Turbine Exhaust	107.6	dB(A) at	80.0	Feet	Single Unit Noise	100.5	dB(A)
Turbine Intake	109.0	dB(A) at	60	Feet			
Single Turbine Property Line Noise Level	107.6	dB(A)					

S2

	SWL = Sound Power Level					SPL = Sound Pressure Level				
	Octave Band Center Frequency (Hz.)									
	31.5	63	125	250	500	1000	2000	4000	8000	
Right Side SPL(A)	70.6	66.9	67.3	53.3	47.7	44.9	44.2	44.3	36.2	400
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	Feet Base
Octave Sum	31.2	40.7	51.2	44.7	44.5	44.9	45.4	45.3	35.1	Distance
Overall SPL(A)	54.8									

Turbine Exhaust SWL	137.0	139.0	141.0	143.0	142.0	140.0	138.0	134.0	128.0	
SPL = SWL + 20 Log r - .5	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	
SPL / Distance	99.4	101.4	103.4	105.4	104.4	102.4	100.4	96.4	90.4	
Exhst Sil D.I.L.	-10.7	-15.0	-19.3	-23.5	-27.8	-32.1	-36.4	-40.6	-44.9	
Directivity (135 Deg.)	-3.0	-4.0	-4.0	-4.0	-11.0	-11.0	-18.0	-18.0	-18.0	
Catlyst Bed I.L.	-1.0	-2.0	-3.0	-4.0	-5.0	-6.0	-6.0	-6.0	-5.0	
Lined Duct Loss (20 FT)	-3.5	-4.3	-5.1	-7.6	-7.6	-7.0	-7.0	-5.9	-5.0	
Sub / SPL Octave Sum	81.2	76.2	72.0	66.4	53.1	46.3	33.0	25.9	17.5	
SPL Silencer Self Noise	86.7	81.7	77.7	77.7	79.7	79.7	79.7	79.7	79.7	
Total SPL Octave Sum	81.2	76.2	72.0	66.4	53.4	47.7	42.7	42.3	42.2	
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	
Octave Sum	41.8	50.0	55.9	57.8	50.2	47.7	43.9	43.3	41.1	

Turbine Intake SWL	129.0	129.0	122.0	121.0	125.0	136.0	138.0	138.0	138.0	
SPL = SWL + 20 Log r - .5	35.1	35.1	35.1	35.1	35.1	35.1	35.1	35.1	35.1	
SPL / Distance	93.9	93.9	86.9	85.9	89.9	100.9	102.9	102.9	102.9	
Donaldson TMD00-4011	0.0	-2.0	-3.0	-4.0	-4.0	-5.0	-11.0	-17.0	-22.0	
Intk Silencer D.I.L.	-7.0	-11.0	-15.0	-19.0	-36.0	-54.0	-55.0	-47.0	-27.0	
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	
Octave Sum	47.5	54.7	52.8	54.3	46.7	41.9	38.1	39.9	52.8	

Calculated SPL(A) At Property Line			
Turbine Body	68.8	dB(A) at 80	Feet
Turbine Exhaust	61.2	dB(A) at 80.0	Feet
Turbine Intake	60.4	dB(A) at 60	Feet
Single Turbine Property Line Noise Level	69.5	dB(A)	

Calculated SPL At Nearest Residence			
Distance to Property	200	Feet	
Single Unit Noise	59.1	dB(A)	

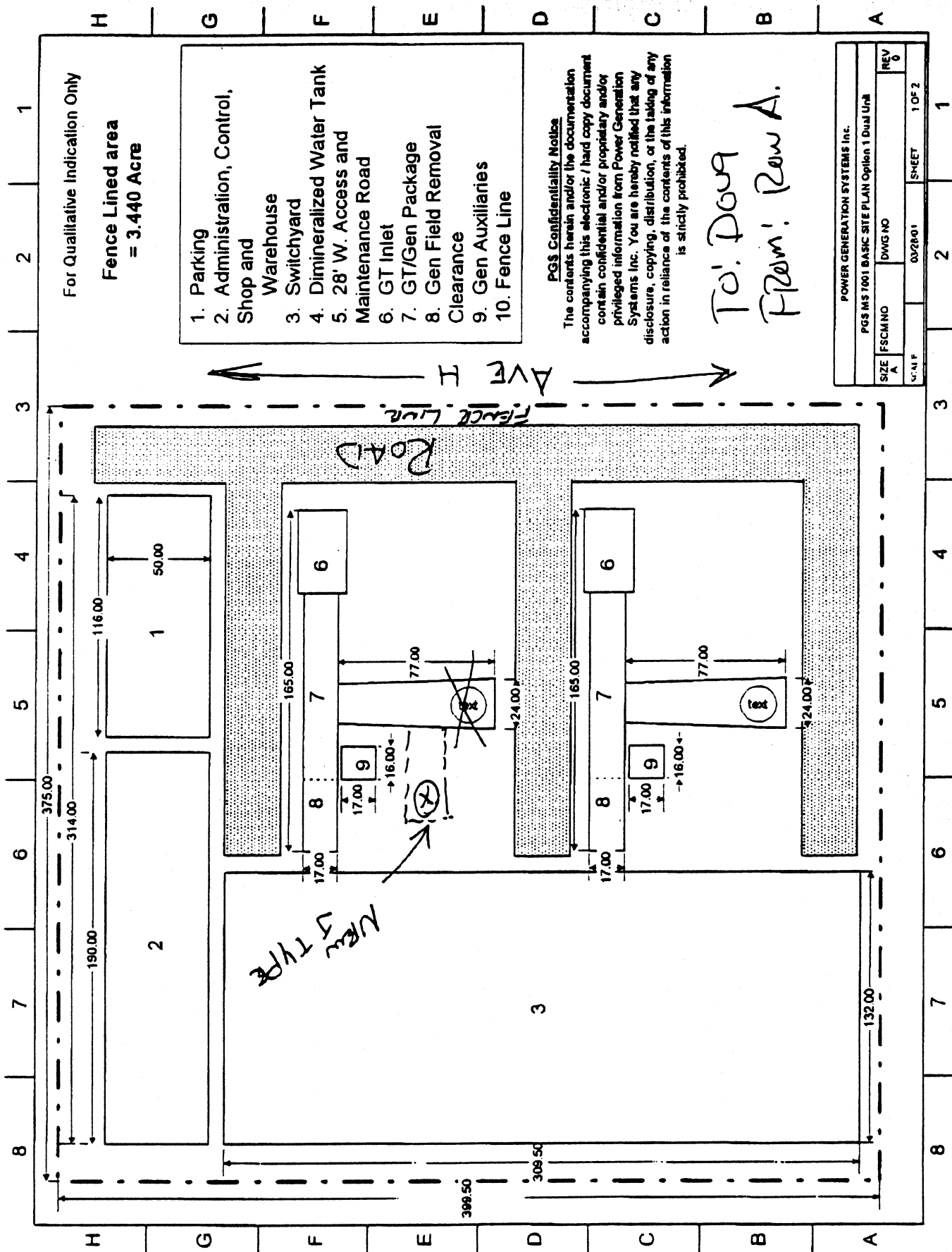
Evaluated Distance	350.0	SWL = Sound Power Level	SPL = Sound Pressure Level
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S3

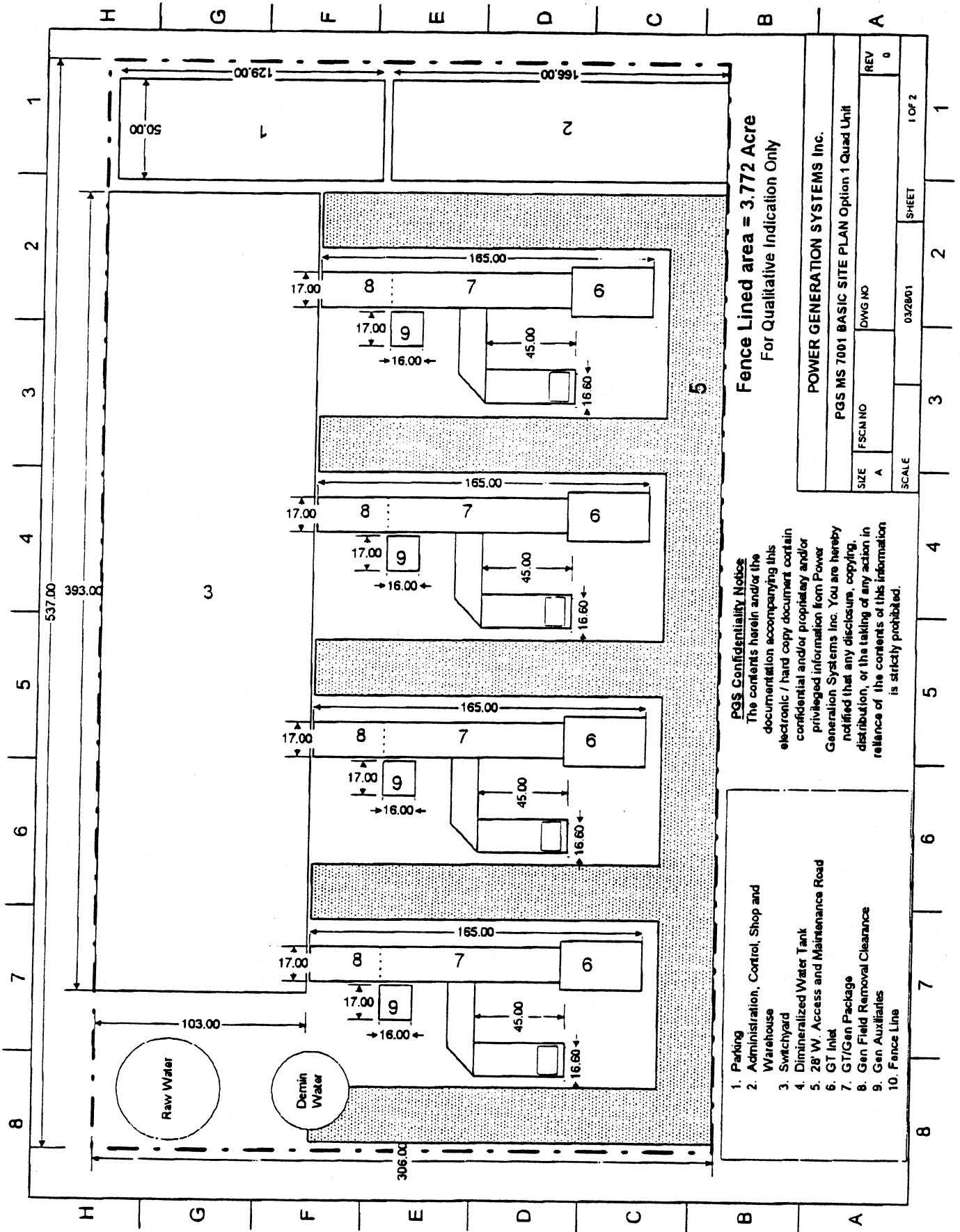
Blackstart Generator	Octave Band Center Frequency (Hz.)								
	31.5	63	125	250	500	1000	2000	4000	8000
L7042GSI	104.0	124.0	123.0	121.0	120.0	120.0	116.0	108.0	102.0
A-Weight	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1
Silencer Interpreted	-15.0	-19.0	-29.0	-38.0	-34.0	-28.0	-25.5	-23.0	-25.0
Octave Sum	49.6	78.8	77.9	74.4	82.8	92.0	91.7	86.0	75.9
Overall SPL(A)	95.9								
Calculated SPL(A)	54.5	dB(A)							

Distance	3
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BASIC SITE PLAN OPTION 1 DUAL UNIT

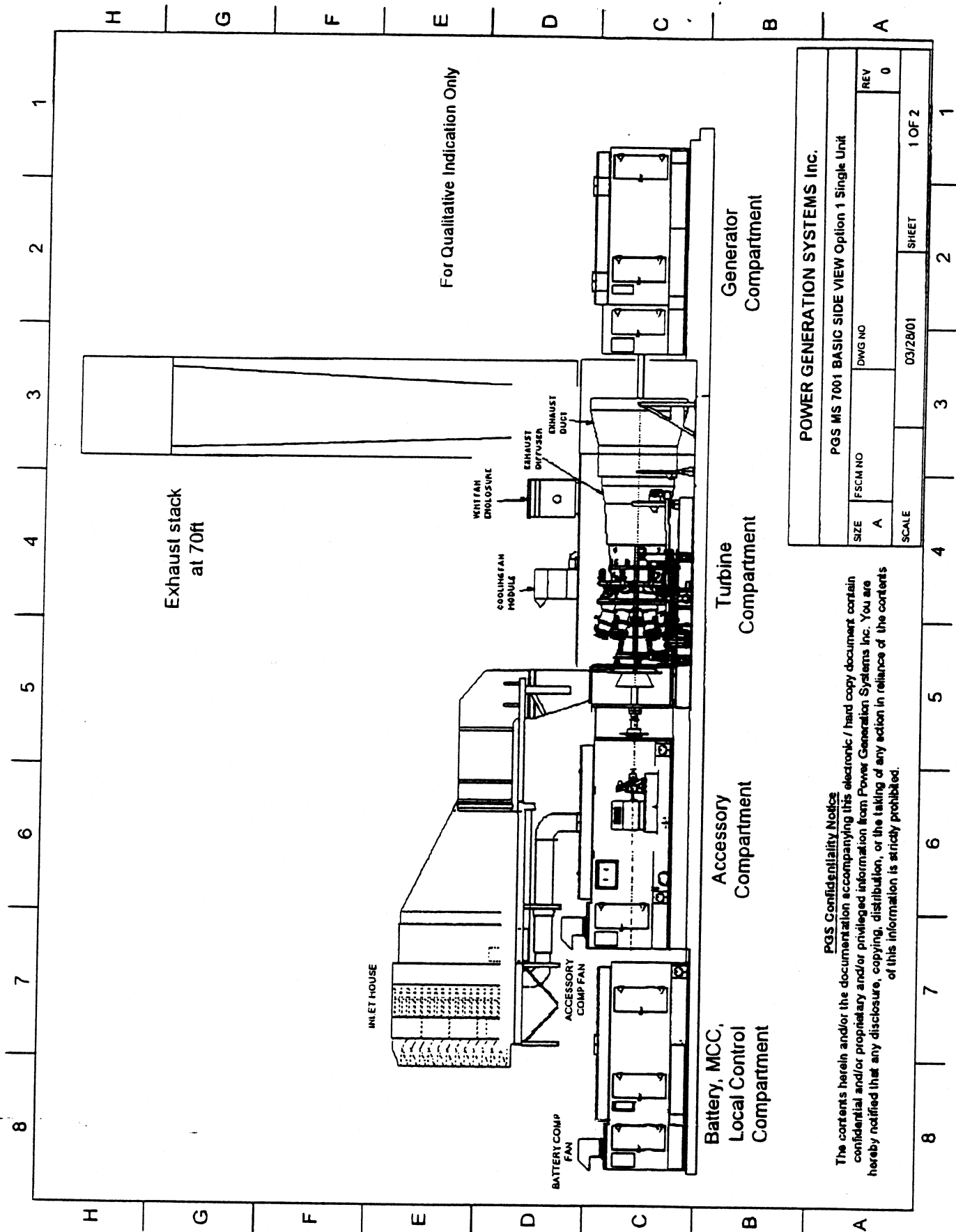


Fence Lined area = 3.772 Acre
For Qualitative Indication Only

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1. Parking
2. Administration, Control, Shop and Warehouse
3. Switchyard
4. Dimineralized Water Tank
5. 28' W. Access and Maintenance Road
6. GT Inlet
7. GT/Gen Package
8. Gen Field Removal Clearance
9. Gen Auxiliaries
10. Fence Line

BASIC SITE PLAN OPTION 1 QUAD UNIT



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POWER GENERATION SYSTEMS INC.

PGS MS 7001 BASIC SIDE VIEW Option 1 Single Unit

SIZE	FSCM NO	DWG NO	REV
A			0
SCALE			03/28/01
SHEET			1 OF 2

BASIC SIDE VIEW OPTION 1 SINGLE UNIT